UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,909	10/30/2003	Jongmo Sung	51876P397	9718

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EXAMINER
KOVACEK, DAVID M

ART UNIT	PAPER NUMBER
2626	

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12/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/697,909	SUNG ET AL.
	Examiner	Art Unit	
	David Kovacek	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 November 2007_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-9_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-9_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _14 August 2007_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, in the Remarks, filed 11/12/2007, with respect to the Final

Rejection(s) of **claim(s) 1-9** been fully considered and are persuasive. Therefore, the

finality of the previous rejection has been withdrawn. However, upon further

consideration, new grounds of rejection have been found, and given next.

Claim Rejections - 35 USC § 103

2.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

3.   **Claims 1-2, 4-5** and **8-9** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Dejaco, cited in a previous Office Action, in view of US Patent

6,208,958 hereinafter referred to as Cho.

Regarding **claim 1**, Dejaco discloses an apparatus for trans-coding between

CELP type codecs having different bandwidths, comprising:

- A first type converting means for receiving formant

    parameters from the input bit stream and converting

    formant parameters from the type specified in the

input CELP format to a suitable type for a formant

bandwidth conversion (Fig. 6, item 610A; Fig. 7, item 702);

- a formant parameter translating means for translating

    formant parameters from input CELP format to output

    CELP format and generating formant parameters in an

    output CELP format (Fig. 5, item 502; Fig. 7, item 702; Col. 2, lines

    45-49; Col. 7, lines 16-19);

- a formant parameter quantizing means for receiving

    the translated formant parameters and quantizing the

    translated formant parameters (Fig. 5, item 506; Fig. 7, item

    712; Col. 2, lines 45-49; Col. 6, lines 55-57; Col. 7, lines 16-19);

- an excitation parameter translating means for

    translating excitation parameters from input CELP

    format to output CELP format and generating

    excitation parameters in an output CELP

    format (Fig. 6, item 630; Col. 2, lines 49-53; Col. 6, lines 04-08); and

- an excitation quantizing means for receiving the

    translated excitation parameters and quantizing the

    translated excitation parameters (Fig. 5, item 506;

    Col. 6, lines 60-62).

Dejaco does not adequately disclose that the formant parameter translating means

includes a formant bandwidth converting means.

Cho discloses a pitch determination apparatus that includes a formant bandwidth conversion [extension] unit (Fig. 2, element 210; Col. 1, line 61 – Col. 2, line 05; Col. 2, lines 63-65) for the purposes of extending formant bandwidth.

The two references are combinable because each is directed to a form of speech data analysis, and also to speech encoding. Further, Cho provides motivation to combine in disclosing the utility of formant bandwidth extension in reducing the influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Therefore, the examiner contends that it would have obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of the teachings of Cho to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth conversion device used for reducing the influence of a first formant in speech data.

Regarding **claim 2**, Dejaco in view of Cho discloses all limitations of **claim 1** as applied above and Dejaco further discloses:

- a formant model order converting means for receiving the input formant parameters from the second type converting means and converting the formant parameters from the model order in the input CELP format into the model order in the output CELP format (Fig. 7, item 704; Fig. 6, item 602);

- a third type converting means for receiving the order-corrected formant parameters from the formant model order converting means and converting the formant parameters from the type used in the model order converting means to a suitable type for frame rate conversion (Fig. 6; item 610B);

- a formant frame rate converting means for receiving the input formant parameters from the third type converting means and converting the formant parameters from the frame rate in the input CELP format to the frame rate in the output CELP format (Fig. 7, item 708); and

- a fourth type converting means for receiving the frame rate-corrected formant parameters from the formant frame rate converting means and converting the formant parameters from the type used in the formant frame rate converting means to a suitable type for the formant parameter quantizing means in the output CELP format (Fig. 6, item 610C).

Though Dejaco in view of Cho does not explicitly disclose a second type converting means for bandwidth-conversion, this limitation is inherently required of any system that permits transcoding between codecs of different bandwidths as is made obvious by Dejaco in view of Cho.

Regarding **claim 4,** Dejaco in view of Cho discloses all limitations of **claim 2** as applied above, and Dejaco further discloses the use of truncation and extension for model order correction (Col. 7, lines 30-41).

Regarding **claim 5**, Dejaco in view of Cho discloses all limitations of **claim 2** as applied above, and Dejaco further discloses the use of interpolation and decimation for adjusting frame rates (Col. 7, line 63 – Col. 8, line 08).

Regarding **claim 8**, this claim is very similar to **claim 1**, and is rejected for the same reasons.

Regarding **claim 9**, this claim is very similar to **claim 1**, and is rejected for the same reasons.

4.   **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dejaco in view of Cho, and in further view of Koa, cited in a previous Office Action.

Regarding **claim 6**, Dejaco in view of Cho discloses all limitations of **claim 2** as applied above, and Dejaco additionally discloses an excitation parameter translator that includes an excitation synthesizing means (Fig. 6, item 606; Col. 8, lines 25-31) and a codebook searcher (Fig. 6, item 608; Col. 7, lines 07-08; Col. 8, lines 32-34).

Cho discloses a pitch determination apparatus that includes a formant bandwidth conversion [extension] unit (Fig. 2, element 210; Col. 1, line 61 – Col. 2, line 05; Col. 2, lines 63-65) for the purposes of extending formant bandwidth.

Dejaco in view of Cho does not adequately disclose a separation of adaptive and fixed codebooks, a perceptual weighting filter before the codebook searching means, nor the excitation bandwidth converting means.

Koa discloses a CELP vocoder that includes both an adaptive and fixed codebook (Fig. 4; Col. 5, lines 42-59), and also perceptual weighting filters before codebook searching (Fig. 4, items 66-68; Col. 5, line 69 – Col. 6, line 09).

These references are combinable because each is directed to a method of speech data analysis and also to encoding speech. Further, Cho provides motivation to combine in disclosing the utility of formant bandwidth extension in reducing the influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Koa provides further motivation in disclosing the need for reduced complexity of processing the excitation parameters of a CELP-type codec (Col. 3, lines 42-45).

Therefore, the examiner contends that it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of Cho to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth conversion device used for reducing the influence of a first formant in speech data, and to further use the teachings of Koa to reduce the complexity of processing the excitation parameters of a CELP-type codec.

5.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dejaco in view of Cho as applied to claim 2 above, and further in view of US Patent 6,615,174 hereinafter referred to as Arslan.

Regarding claim 3, Dejaco in view of Cho discloses all limitations of claim 2 as applied above, but does not adequately describe the bandwidth converting means for compressing formant bandwidth.

Arslan teaches formant bandwidth compression [reduction] by direct adjustment of line spectral frequencies (Col. 9, lines 01-03) for the use in transcoding ("transforming a source signal into a target signal"; Claim 1).

The references are combinable because each deals with a method of speech encoding and processing. Cho provides motivation to combine in disclosing the utility of formant bandwidth extension in reducing the influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Arslan further provides motivation in disclosing the usefulness of compression of formant bandwidth to remove audible buzz artifacts caused by overly-expanded formant bandwidths (Col. 8, lines 58-61).

Therefore, the examiner contends that it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of Cho using the teachings of Arslan to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth extension'[

device used for reducing the influence of a first formant in speech data, but also utilizing

formant bandwidth compression to remove audible buzz artifacts in the event of the

formant bandwidth being overly expanded.

6.   **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dejaco in

view of Cho, and in further view of Koa as applied to **claim 6** above, and further in view

of Arslan.

Regarding **claim 7**, Dejaco in view of Cho and in further view of Koa teaches all

limitations of **claim 6** as applied above, but does not adequately teach the decimation

and/or interpolation of the excitation parameter bandwidth.

Arslan does disclose the reduction of formant bandwidth by direct adjustment of

line spectral frequencies, including a decimation method (use of "bandwidth adjustment

ratio"; Col. 9, lines 06-15). Because the decimation is achieved using a bandwidth

adjustment ratio, it would be obvious to adjust the ratio to achieve an interpolation

[expansion] of formant bandwidth. Further, Arslan specifically discloses that excitation

parameters can be transformed in the same manner as formant parameters (Col. 10,

lines 18-21).

These references are combinable because each is directed to a method of

speech data analysis and also to encoding speech. Further, Cho provides motivation to

combine in disclosing the utility of formant bandwidth extension in reducing the

influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Koa provides further motivation in disclosing the need for reduced complexity of processing the excitation parameters of a CELP-type codec (Col. 3, lines 42-45).

Arslan further provides motivation in disclosing the usefulness of compression of formant bandwidth to remove audible buzz artifacts caused by overly-expanded formant bandwidths (Col. 8, lines 58-61).

Therefore, the examiner contends that it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of Cho' to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth conversion device used for reducing the influence of a first formant in speech data, and to further use the teachings of Koa to reduce the complexity of processing the excitation parameters of a CELP-type codec, and to further still use the teachings of Arslan to remove audible buzz artifacts caused by overly-expanded formant bandwidths.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Boillot (US Patent Application 2004/0024591) teaches a method and apparatus for enhancing audio signal loudness utilizing formant bandwidth.

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

9.   Please note that though the examiner providing signatory authority for this action

has changed, the examination has been performed by the same examiner throughout

prosecution.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to David Kovacek whose telephone number is (571) 270-

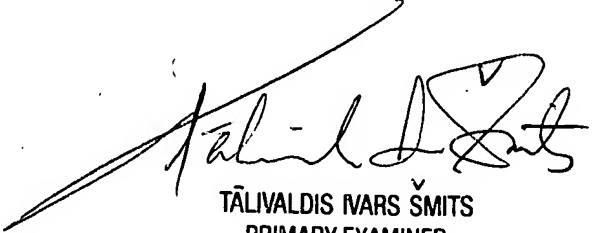3135. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DMK 11/27/2007

TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER